

# Comparisons of Job Characteristics

Focus Occupation: **Materials Scientists (19-2032)**

Associated Occupation: **Geological and Petroleum Technicians (19-4041)**

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

## Knowledge

Similarity of Focus Occupation to Associated Occupation: 74

Focus Occupation: Materials Scientists (19-2032)

Associated Occupation: Geological and Petroleum Technicians (19-4041)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Mathematics	9.2	14.8	15.5	0	Current knowledge level may be sufficient
Computers and Electronics	8.4	14.4	10.0	<<	Extensive education and/or training may be required
Engineering and Technology	5.7	12.0	16.2	>>	Current knowledge level is likely more than sufficient
Geography	3.9	11.6	5.3	<<	Extensive education and/or training may be required
Physics	4.3	11.2	9.6	<	Expanded education and/or training may be required
Chemistry	4.8	10.7	23.3	>>	Current knowledge level is likely more than sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

## Skills

Similarity of Focus Occupation to Associated Occupation: 83

Focus Occupation: Materials Scientists (19-2032)

Associated Occupation: Geological and Petroleum Technicians (19-4041)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Science	4.5	9.8	16.8	>>	Skill level is likely more than sufficient
Mathematics	6.2	7.8	7.7	0	Current skill level may be sufficient
Troubleshooting	4.5	6.1	3.8	<<	Extensive development of skills in this area may be required
Equipment Selection	3.3	4.7	2.0	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

Abilities		Similarity of Focus Occupation to Associated Occupation: 94			
Focus Occupation: Materials Scientists (19-2032) Associated Occupation: Geological and Petroleum Technicians (19-4041)					
Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Written Comprehension	11.0	13.0	14.2	0	Current ability level may be sufficient
Oral Comprehension	12.5	12.6	15.3	>	Current ability level is likely sufficient
Oral Expression	12.4	12.3	15.4	>	Current ability level is likely sufficient
Near Vision	11.1	11.1	11.8	0	Current ability level may be sufficient
Inductive Reasoning	10.2	10.7	14.1	>>	Current ability level is likely more than sufficient
Information Ordering	9.9	10.7	11.6	0	Current ability level may be sufficient
Written Expression	9.8	10.7	13.4	>	Current ability level is likely sufficient
Deductive Reasoning	10.6	10.4	13.8	>>	Current ability level is likely more than sufficient
Category Flexibility	9.0	10.3	11.9	>	Current ability level is likely sufficient
Flexibility of Closure	7.8	9.9	10.6	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	8.4	10.3	>	Current ability level is likely sufficient
Number Facility	6.3	8.4	8.4	0	Current ability level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common		Similarity of Focus Occupation to Associated Occupation: 88
Focus Occupation: Materials Scientists (19-2032) Associated Occupation: Geological and Petroleum Technicians (19-4041)		
Work Activities	Exclusivity of Activity	
Adhere to safety procedures	12	
Analyze chemical experimental, test, or analysis data or findings	69	
Analyze scientific research data or investigative findings	27	
Collect scientific or technical data	30	
Collect statistical data	47	
Communicate technical information	4	
Conduct laboratory research or experiments	57	
Conduct standardized qualitative laboratory analyses	62	
Conduct standardized quantitative laboratory analyses	62	
Develop or maintain databases	30	
Develop tables depicting data	33	

Direct and coordinate activities of workers or staff	3
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Identify properties of rocks or minerals	85
Maintain records, reports, or files	5
Prepare reports	8
Record test results, test procedures, or inspection data	48
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use hazardous materials information	35
Use knowledge of materials testing procedures	70
Use laboratory equipment	60
Use mathematical or statistical methods to identify or analyze problems	30
Use physical science research techniques	68
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

## Tools and Technologies that Both Occupations Have in Common

Similarity of Focus  
Occupation to Associated  
Occupation: 73

**Focus Occupation: Materials Scientists (19-2032)**

**Associated Occupation: Geological and Petroleum Technicians (19-4041)**

Tools and Technologies	Exclusivity
Chemical evaluation instruments and supplies	10
Computers	1
Content authoring and editing software	1
Crystallography equipment	23
Data management and query software	1
Electrochemical measuring instruments and accessories	9
Forming tools	2
Geophysical and geotechnical instruments	23
Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Length and thickness and distance measuring instruments	2
Sampling equipment	12

Soil measuring equipment	20
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.